

Using Children's Literature to Extend Preschool/Children's Science Concepts Ready KIDS Conference

Greg Gierhart
Nancy Lovett




Participant Objectives

- Participants will be able to identify how to engage children in science activities.
- Participants will gain ideas for classroom environments, planned activities, as well as how to promote Science experiences as an extension of children's work and play.
- Participants will be able to help teachers become more comfortable creating science experiences for children.
- Participants will be able to help teachers extend science activities to include Literacy.
- Participants will be able to identify the standards and benchmarks and the Framework that relates to science and guide a program to meet those indicators




What is Science?

- The goal of science is to understand the natural world (Worth and Grollman, 2003, p. 23).
- Science is observing, exploring, experimenting and discovering.
- Science is coming to conclusions based on observations, collecting data, etc.
- Children are gaining an understanding of how the world works



Theory and Practice for Quality Science Programs


- Engage Children in Science Inquiry.
- Child centered
- Make observations
- Ask questions
- Make predictions
- Test predications
- Make discoveries
- Reflect on their experiences
- Exploration



Theory and Practice for Quality Science Programs

A quality science program is NOT


- Confined to one shelf or table.
- Focused on learning facts.
- Found in narrow, unrelated topics/projects.



Theory and Practice for Quality Science Programs

A high-quality science program

- Builds on children's prior knowledge.
- Draws on children's curiosity.
- Encourages children to ask questions and develop their own ideas.
- Engages children in in-depth exploration, over time, in a carefully planned environment.
- Encourages reflection and documentation.



Theory and Practice for Quality Science Programs

A high-quality science program

- Is integrated into the daily work and play, and into other areas.
- Includes all children and individualizes for all children.(Worth and Grollman, 2003, p. 8-13)
- Is about the real world
- Develops reasoning skills (Eshach Fried, 2005, p. 316)



Why Science for Young Children?

- Children enjoy observing and thinking about nature.
- Develops positive attitudes toward science.
- Early exposure leads to later understanding of scientific concepts.
- Use of scientific language influences later understanding of scientific concepts.
- Children can understand scientific concepts and reason scientifically.
- Science is a means for developing scientific thinking.(Eshach Fried, 2005, p. 316)



We KNOW to Follow their Lead

- Build on children's spontaneous exploration.
- When children are already in play, it is much easier to follow them and add science and/or literacy to the experience that is already occurring.
- We are capitalizing on teachable moments.



IMPORTANT STATEMENT

Science is not separate from
Literacy, Math and learning Social
Skills.



Science and Literacy

- By its nature, science requires language, communication, and the use of books. The use of language deepens understanding of the science with which they are engaged. And as children collect data and represent their work, they may begin to write words, learn new vocabulary, and express themselves using many different media (Worth and Grollman, 2003, p.7).



Incorporate Literacy

- Language Development Vocabulary, complex language, conversation.
- Using symbols.
- Sorting.
- Classification.
- Labeling.
- Record findings (written or draw pictures).
- Documenting children's work and ideas.
- Read books on the topic.



What should be the science area?

- Science should occur throughout the room in different interest areas (See CC, p.188-189).
- A science shelf can hold science tools, but they must be useful and relate to the happenings throughout the room (i.e. Magnifiers to view the insects, or clip boards to record observations).
- A science table can also be used if there are ongoing inquiries happening.
- Resist putting unrelated tools, objects, toys on the shelf or table.
- Use beautiful, natural materials.



Science Content-Life Sciences

- Life Science observing plants and animals
- Physical characteristics of living things.
- How they live, basic needs behaviors.
- Coexistence with other living things and the environment.
- Life cycles, how things change.
- Variations and diversity, classification and categorization.
- Take measurements over time.



Examples of Life Science Experiences

- Study the trees throughout the seasons.
- Observe insects outside and perhaps bring them inside.
- Observe a bird building a nest and warming eggs.
- Observe a bush or vines that produce berries/fruit.
- Study the human body.



Create Science Inquiry from Children's Interests and Ideas

- Based on this drawing, a teacher can launch a whole study on seeds.
- Fruit, Vegetables, Trees, Flowers
- Seeds that become food
- Sorting and classifying seeds
- Planting seeds (cycle)
- This could be a study that lasts for months.



Activity

- Talk to your neighbor and pick one living thing that children would find outside at their center.
- How could the children study this and document over time?
- What kind of questions could a teacher ask to promote investigation?
- How can a teacher document this and discuss it with the children?
- How can they bring this indoors?



Meal Worm Study

○ Activity



What do you do with a Tail like this?

- ◊ Let's see the book
- ◊ Let's read the book
- ◊ Activity about the book



Science Content-Physical Science

- Physical Science direct exploration of objects, materials, and events in the non living world (Worth and Grollman, p. 66).
- Study the properties of objects and materials.
- Study how things move, and what factors influence movement.
- Study building structures/balance/strength.
- Study sound and light (light tables, overhead projectors, flashlights, shadows).(Worth and Grollman, 2003)



Science Content-Earth Space

- Earth and Space Science
Should be focused on
what children can
actually see on the Earth
and in Space.
- Earth Science
- Rocks, sand, soil
- Rivers, lakes, oceans,
etc.
- Weather
- Space
- Following the sun
- Phases of the moon



Avoid Studies Related to

- Studying the Solar System, planets, etc.
- Studying the formation of the Earth.
- Dinosaurs.
- Distant environments.
- Try to stick to what the child can experience first hand. There's plenty to do in any environment/climate.



Get Teachers Comfortable with Science

- Teachers don't need to have all of the answers.
- Teachers need to get interested in science.
- They need to read about basic scientific principles, the animals and plants they study, etc.
- They need to play with the materials before they present them to children.



Get Teachers Comfortable with Science

- They need to learn what is and is not appropriate science for children.
- Most teachers are probably afraid of science themselves. Science for young children is not as complex as they may think.
- Let the children guide the experience. Then the teachers will realize what they need to research.



Teachers Role

- Pick a topic (teachers interest or based on children's interests).
- Prepare read, search the Internet, talk with others/parents, and work with the materials.
- Create the physical environment.
- Allow time for children's inquiry.
- Help children by asking questions.



Teachers Role

- Encourage children's work.
- Engage children in conversation.
- Lead group discussions about their work (Capture predictions, ideas, and conclusions on charts or lists).
- Science Talks
- Encourage children to document (art, writing, etc).
- Document the children's work (photos, videos, graphs, etc).
- Observe and assess individuals and group.(Worth and Grollman, 2003, p. 8-13).



New Understandings

- Exploration is more than play and having hands on experiences. When children discuss and reflect on their experiences they truly gain insight and understanding.
- Content and Inquiry are equally important, yet all science areas do not need to be covered. Rather, uncover some.
- Remember to engage the children that are quietly working.
- Their questions should guide your interactions.



Science Books

- There is a plethora of science books for early childhood!



Share Ideas

3, 2, 1

- Write 3 new things you learned about Science and Literacy.
- Write 2 things that you are going to do when you get back.
- Write one question that you still have.



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Contact us:

Greg Gierhart: ggierhart@murraystate.edu

Nancy Lovett: nlovett1@murraystate.edu